Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

**Must-Knows: Unit 7 (Photosynthesis)**

Ms. OK, AP Biology, 2014-2015

**Test Format:** 22 multiple choice questions (3 of these are “Science Skills” questions), 1 short response question

**Topic #1: The Light Reactions**

1. What pigments are found in the thylakoid membranes? What is their role in the light reactions of photosynthesis?
2. What colors of light are most ABSORBED by chlorophyll a? What color of light is most REFLECTED by chlorophyll a?
3. What happens to water during the light reactions of photosynthesis?
4. What is the goal of cyclic electron flow?
5. What role do the electron transport chains in the thylakoid membrane play in the creation of a proton motive force? How is the proton motive force used?

**Topic #2: The Calvin Cycle and Exceptions to Normal Photosynthesis (C4 and CAM)**

1. What is the main goal of the Calvin cycle?
2. Describe the relationship between the light reactions and the Calvin cycle.
3. What are the reactants and products of the Calvin cycle?
4. Where in the chloroplast does the Calvin cycle occur?
5. What occurs during photorespiration? Why is this an issue for plants?
6. How do C4 plants minimize photorespiration?
7. How do CAM plants minimize photorespiration? Why do CAM plants keep their stomata closed during the daytime?

**Topic #3: Comparing Photosynthesis with Celluar Respiration**

1. Why are photosynthesis and cellular respiration often thought of as a cycle? Write out the full, balanced chemical equation for each process and compare them.
2. What types of organisms have chloroplasts? What types of organisms have mitochondria?
3. Compare / contrast the electron transport chain in the mitochondrion vs. chloroplast in terms of the electron carriers used to “drop off” electrons, the direction of H+ pumping, the creation of an electrochemical gradient, the synthesis of ATP, the final electron acceptor, etc. How are they similar? How are they different? You can use the diagram below to assist you.

